IN REPLY
REFER TO: Joint Interoperability Test Command (JTE)

MEMORANDUM FOR DISTRIBUTION   **27 May 11**

SUBJECT: Special Interoperability Test Certification of the Cisco Codian Media Services
           Engine (MSE) 8000 Version 2.0 (1.13)

References: (a) DoD Directive 4630.5, "Interoperability and Supportability of Information
                 Technology (IT) and National Security Systems (NSS)," 5 May 2004
            (b) CJCSI 6212.01D, "Interoperability and Supportability of Information
                 Technology and National Security Systems," 8 March 2006
            (c) through (f), see Enclosure 1

1. References (a) and (b) establish the Defense Information Systems Agency, Joint
Interoperability Test Command (JITC), as the responsible organization for interoperability test
certification.

2. The Cisco Codian MSE 8000 Version 2.0 (1.13) is hereinafter referred to as the System
Under Test (SUT). The SUT met all the critical interface and functional interoperability
requirements and is certified for joint use within the Defense Switched Network (DSN) as a
Video Teleconferencing (VTC) system. The SUT also met the conditional requirements for an
Internet Protocol (IP) interface with the International Telecommunication Union –
Telecommunication Standardization Sector (ITU-T) H.323 protocol; however, Assured Service
is not yet defined for an IP interface with ITU-T H.323 protocol. Therefore, Command and
Control (C2) VTC users and Special C2 VTC users are not authorized to be served by an IP
interface with the ITU-T H.323 protocol. The SUT meets the critical interoperability
requirements set forth in Reference (c) using test procedures derived from Reference (d). No
other configurations, features, or functions, except those cited within this report, are certified by
the JITC. This certification expires upon changes that affect interoperability, but no later than
three years from the date of this memorandum.

3. This finding is based on interoperability testing conducted by JITC, review of the vendor's
Letters of Compliance (LoC), and Defense Information Assurance (IA)/Security Accreditation
Working Group (DSAWG) accreditation. Interoperability testing was conducted by JITC at the
Global Information Grid Network Test Facility, Fort Huachuca, Arizona, from 15 through
26 June 2009. Regression testing of a patch to fix two interoperability discrepancies was
conducted on 12 August 2009. Review of the vendor's LoC was completed on 20 July 2009.
DSAWG granted accreditation on 10 November 2009 based on the security testing completed by
DISA-led Information Assurance test teams and published in a separate report, Reference (e).
The Certification Testing Summary (Enclosure 2) documents the test results and describes the

JITC Memo, JTE, Special Interoperability Test Certification of the Cisco Codian Media Services Engine (MSE) 8000 Version 2.0 (1.13)

test configuration. All testing was conducted on Tandberg® VTC systems, which have all been renamed to Cisco® VTC systems because Cisco® purchased Tandberg® in 2010. The product names have not changed. The documentation for the Tandberg certification is provided in Reference (f), which is identical to this certification except for paragraph 3 of the memorandum.

4. The Functional Requirements used to evaluate the interoperability of the SUT and the interoperability statuses are indicated in Table 1.

Table 1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Requirements Required or Conditional	Status	UCR Reference
IP 10/100 Mbps (ITU-T H.323)	No [1]	Yes [2]	The VTC system/endpoints shall meet the requirements of FTR1080B-2002 (R)	Met	5.2.12.4.5
			ITU-T H.323 in accordance with FTR 1080B-2002 (C)	Met	5.2.12.4.5
			Layer 3 Differential Service Code Point tagging as specified in UCR, 5.2.12.8.2.9 (C)	Met	5.2.12.4.5
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	5.2.12.4.5
			Audio add-on interface, implemented independently of an IAS, shall be in accordance with UCR, 5.2.12.3 (CPE) (C)	Met	5.2.12.4.5
			Physical, electrical, and software characteristics shall not degrade or impair switch and associated network operations (R)	Met	5.2.12.4.5
ISDN PRI T1, ISDN PRI E1 (ITU-T H.320)	No [1]	Yes	The VTC system/endpoints shall meet the requirements of FTR 1080B-2002 (R)	Met	5.2.12.4.5
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	5.2.12.4.5
			Audio add-on interface, implemented independently of an IAS, shall be in accordance with UCR, 5.2.12.3 (CPE) (C)	Met	5.2.12.4.5
			Integrated PRI interface shall be in conformance with IAS requirements in UCR, 5.2.12.7 (IAS) (C)	Met	5.2.12.4.5
			Physical, electrical, and software characteristics of VTU system(s)/ endpoint(s) that are used in the DSN network shall not degrade or impair the serving DSN switch and its associated network operations.(R)	Met	5.2.12.4.5
Security	Yes	Certified	GR-815, STIGs, and DoDI 8510.bb (DIACAP) (R)	See note 3.	3.2.3, 3.2.5, and 5.4.6.1

NOTES:
1 The VTC system interface requirements can be met with ISDN PRI, Serial, or ISDN BRI. In addition the SUT may include an ITU-T H.323 conditional interface.
2 The SUT also met the conditional requirements for an IP interface with the ITU-T H.323 protocol; however, Assured Service is not yet defined for an IP interface with ITU-T H.323 protocol. Therefore, C2 VTC users and Special C2 VTC users are not authorized to be served by an IP interface with the ITU-T H.323 protocol. Furthermore, the SUT does not offer IPv6, however this requirement is currently a conditional requirement for an MCU or VTU. This requirement will be changed as required in the UCR change 1. In the interim OSD has issued an interim rules of engagement dated 23 June 2009, and the vendor will have 18 months from this date to comply. There is no operational impact.
3 Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).

Table 1. SUT Functional Requirements and Interoperability Status

LEGEND:			
BRI	Basic Rate Interface	IAS	Integrated Access Switch
C	Conditional	IP	Internet Protocol
C2	Command and Control	IPv6	Internet Protocol version 6
CPE	Customer Premise Equipment	ISDN	Integrated Services Digital Network
DIACAP	Department of Defense Information Assurance Certification and Accreditation Process	ITU-T	International Telecommunication Union - Telecommunication Standardization Sector
DISA	Defense Information Systems Agency	Mbps	Megabits per seconds
DoDI	Department of Defense Instruction	MCU	Multipoint Control Unit
DSN	Defense Switched Network	OSD	Office of the Secretary of Defense
E1	European Basic Multiplex Rate (2.048 Mbps)	PRI	Primary Rate Interface
FTR	Federal Telecommunications Recommendation	R	Required
GR	Generic Requirement	STIGs	Security Technical Implementation Guides
GR-815	Generic Requirements For Network Element/Network System (NE/NS) Security	SUT	System Under Test
		T1	Digital Transmission Link Level 1 (1.544 Mbps)
H.320	Standard for narrowband VTC	UCR	Unified Capabilities Requirements
H.323	Standard for multi-media communications on packet-based networks	VTC	Video Teleconferencing
		VTU	Video Teleconferencing Unit

5. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at https://stp.fhu.disa.mil. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at https://jit.fhu.disa.mil (NIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at http://jitc.fhu.disa.mil/tssi. Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO), e-mail: ucco@disa.mil.

6. The JITC point of contact is Mr. Steven Lesneski, DSN 879-5400, commercial (520) 538-5400, FAX DSN 879-4347, or e-mail to steven.lesneski@disa.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 0818201.

FOR THE COMMANDER:

2 Enclosures a/s   for BRADLEY A. CLARK
                                                       Chief
                                                       Battlespace Communications Portfolio

JITC Memo, JTE, Special Interoperability Test Certification of the Cisco Codian Media Services Engine (MSE) 8000 Version 2.0 (1.13)

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U.S. Joint Forces Command, Net-Centric Integration, Communication, and Capabilities
    Division, J68
Defense Information Systems Agency, GS23

ADDITIONAL REFERENCES

(c)   Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008," 22 January 2009

(d)   Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006

(e)   Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Tandberg Codian Media Service Engine (MSE) 8000 Version 2.0(1 rev 13) (Tracking Number 0818201)," 10 November 2009

(f)   Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Tandberg Codian Media Service Engine (MSE) 8000 Version 2.0(1 rev 13) (Tracking Number 0818201)," 10 November 2009

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. Cisco Codian Media Services Engine (MSE) 8000 Version 2.0 (1.13); hereinafter referred to as the System Under Test (SUT).

2. PROPONENT. United States Special Operations Command (USSOCOM).

3. PROGRAM MANAGER. Mr. John Van Buren, SONC J61, 7701 Tampa Point Blvd. Macdill Air Force Base, Florida. 33621, Email: john.vanburen@soccom.mil.

4. TESTER. Joint Interoperability Test Command (JITC), Fort Huachuca, Arizona.

5. SYSTEM UNDER TEST DESCRIPTION. The SUT is a network appliance that provides multi-site Video Teleconferencing (VTC) capabilities. The primary function is to serve as a bridge to allow multiple endpoints such as codecs and other VTC units to communicate in a single call. The SUT supports endpoints using International Telecommunication Union-Telecommunication Standardization Sector (ITU-T) H.323 and ITU-T H.320. The SUT is equipped with the following blades:

- Codian 8050 Supervisor blade - used to monitor and the management and configuration of the system.
- Codian 8510 Media 2 blade - provides up to 20 High Definition (HD) ports or 80 Standard Definition (SD) ports plus 40 audio ports for multipoint conferencing.
- Codian 8321 Integrated Services Digital Network (ISDN) Gateway - provides up to 8 European Basic Multiplex Rate (E1) or Digital Transmission Link Level 1 (T1) Primary Rate Interface (PRI) for ITU-T H.320 to ITU-T H.323 call integration.

The SUT does not offer IPv6, however this requirement is currently a conditional requirement for a Multipoint Control Unit (MCU) or Video Teleconferencing Unit (VTU). This requirement will be changed as required in the UCR change 1. In the interim the Office of the Secretary of Defense (OSD) has issued an interim rules of engagement dated 23 June 2009, and the vendor will have 18 months from this date to comply. There is no operational impact.

6. OPERATIONAL ARCHITECTURE. The Unified Capabilities Requirements (UCR) Defense Switched Network (DSN) architecture in Figure 2-1 depicts the relationship of the SUT to the DSN switches.
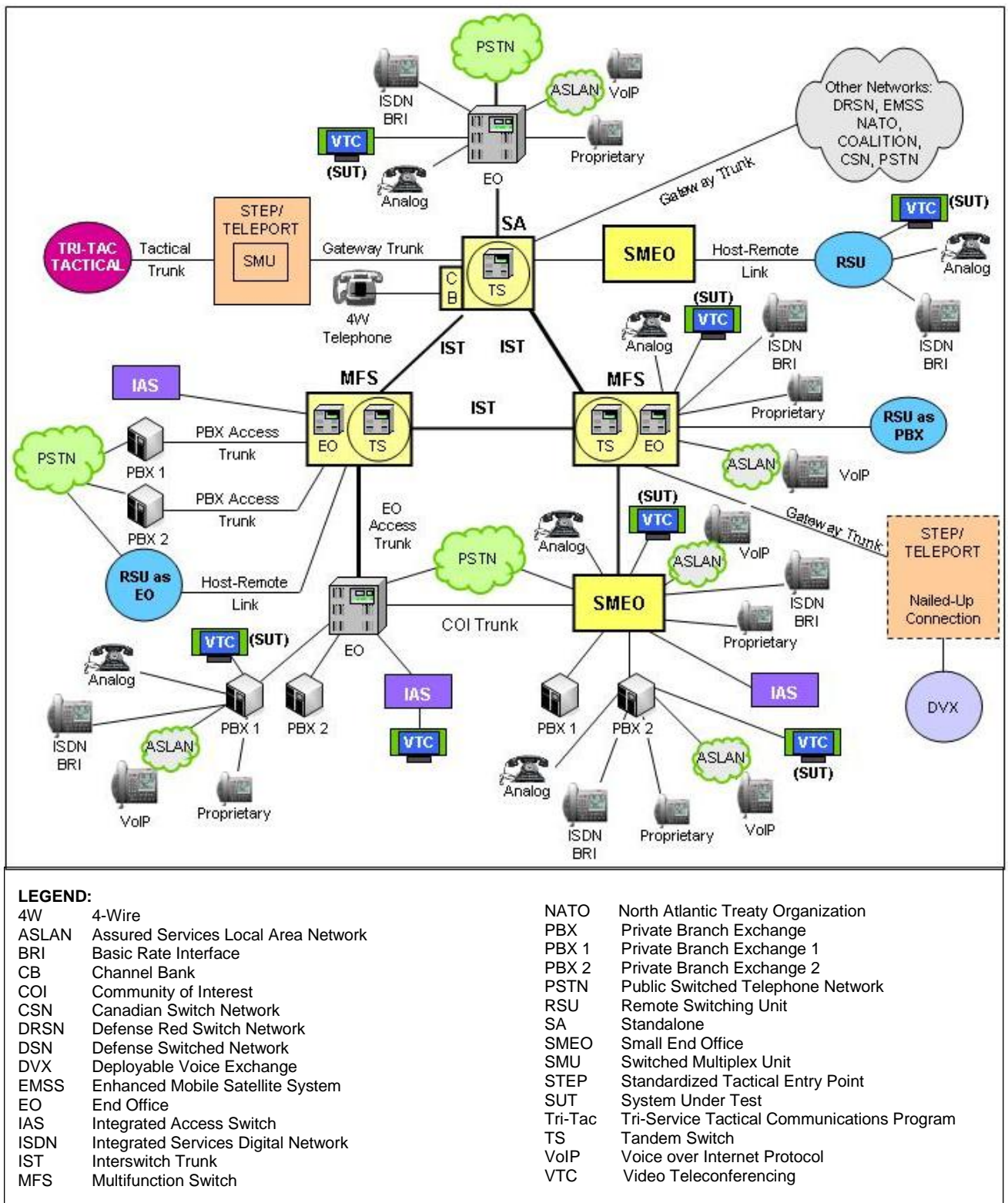
Figure 2-1. DSN Architecture

LEGEND:

4W	4-Wire
ASLAN	Assured Services Local Area Network
BRI	Basic Rate Interface
CB	Channel Bank
COI	Community of Interest
CSN	Canadian Switch Network
DRSN	Defense Red Switch Network
DSN	Defense Switched Network
DVX	Deployable Voice Exchange
EMSS	Enhanced Mobile Satellite System
EO	End Office
IAS	Integrated Access Switch
ISDN	Integrated Services Digital Network
IST	Interswitch Trunk
MFS	Multifunction Switch

NATO	North Atlantic Treaty Organization
PBX	Private Branch Exchange
PBX 1	Private Branch Exchange 1
PBX 2	Private Branch Exchange 2
PSTN	Public Switched Telephone Network
RSU	Remote Switching Unit
SA	Standalone
SMEO	Small End Office
SMU	Switched Multiplex Unit
STEP	Standardized Tactical Entry Point
SUT	System Under Test
Tri-Tac	Tri-Service Tactical Communications Program
TS	Tandem Switch
VoIP	Voice over Internet Protocol
VTC	Video Teleconferencing

7. REQUIRED SYSTEM INTERFACES. Requirements specific to the SUT and interoperability results are listed in Table 2-1. These requirements are derived from the UCR, 5.2.12.4, Interface and Functional Requirements and verified through JITC testing and review of vendor's Letters of Compliance (LoC).

Table 2-1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Requirements Required or Conditional	Status	UCR Reference
IP 10/100 Mbps (ITU-T H.323)	No [1]	Yes [2]	The VTC system/endpoints shall meet the requirements of FTR1080B-2002 (R)	Met	5.2.12.4.5
			ITU-T H.323 in accordance with FTR 1080B-2002 (C)	Met	5.2.12.4.5
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			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	5.2.12.4.5
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			Physical, electrical, and software characteristics of VTU system(s)/ endpoint(s) that are used in the DSN network shall not degrade or impair the serving DSN switch and its associated network operations.(R)	Met	5.2.12.4.5
Security	Yes	Certified	GR-815, STIGs, and DoDI 8510.bb (DIACAP) (R)	See note 3.	3.2.3, 3.2.5, and 5.4.6.1

NOTES:
1 The VTC system interface requirements can be met with ISDN PRI, Serial, or ISDN BRI. In addition the SUT may include an ITU-T H.323 conditional interface.
2 The SUT also met the conditional requirements for an IP interface with the ITU-T H.323 protocol; however, Assured Service is not yet defined for an IP interface with ITU-T H.323 protocol. Therefore, C2 VTC users and Special C2 VTC users are not authorized to be served by an IP interface with the ITU-T H.323 protocol. Furthermore, the SUT does not offer IPv6, however this requirement is currently a conditional requirement for an MCU or VTU. This requirement will be changed as required in the UCR change 1. In the interim OSD has issued an interim rules of engagement dated 23 June 2009, and the vendor will have 18 months from this date to comply. There is no operational impact.
3 Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).

LEGEND:			
BRI	Basic Rate Interface	IAS	Integrated Access Switch
C	Conditional	IP	Internet Protocol
C2	Command and Control	IPv6	Internet Protocol version 6
CPE	Customer Premise Equipment	ISDN	Integrated Services Digital Network
DIACAP	Department of Defense Information Assurance Certification and Accreditation Process	ITU-T	International Telecommunication Union - Telecommunication Standardization Sector
DISA	Defense Information Systems Agency	Mbps	Megabits per seconds
DoDI	Department of Defense Instruction	MCU	Multipoint Control Unit
DSN	Defense Switched Network	OSD	Office of the Secretary of Defense
E1	European Basic Multiplex Rate (2.048 Mbps)	PRI	Primary Rate Interface
FTR	Federal Telecommunications Recommendation	R	Required
GR	Generic Requirement	STIGs	Security Technical Implementation Guides
GR-815	Generic Requirements For Network Element/Network System (NE/NS) Security	SUT	System Under Test
		T1	Digital Transmission Link Level 1 (1.544 Mbps)
H.320	Standard for narrowband VTC	UCR	Unified Capabilities Requirements
H.323	Standard for multi-media communications on packet-based networks	VTC	Video Teleconferencing
		VTU	Video Teleconferencing Unit

8. TEST NETWORK DESCRIPTION. The SUT was tested at JITC's Global Information Grid Network Test Facility (GNTF) in a manner and configuration similar to that of the DSN operational environment. Testing the system's required functions and features was conducted using the test configuration depicted in Figure 2-2.

Figure 2-2. SUT ISDN PRI and ITU-T H.323 (IP) Test Configuration

LEGEND:

5ESS	Class 5 Electronic Switching System
ASLAN	Assured Services Local Area Network
BRI	Basic Rate Interface
CS	Communication Server
DSN	Defense Switched Network
E1	European Basic Multiplex Rate (2.048 Mbps)
EWSD	Elektronisches Wählsystem Digital
H.323	Standard for multi-media communications on packet-based networks
IP	Internet Protocol
ISDN	Integrated Services Digital Network

ITU-T	International Telecommunication Union - Telecommunication Standardization Sector
Mbps	Megabits per second
MSE	Media Service Engine
MXP	Media Experience
PRI	Primary Rate Interface
PSTN	Public Switched Telephone Network
SS7	Signaling System 7
SUT	System Under Test
T1	Digital Transmission Link Level 1 (1.544 Mbps)

9. SYSTEM CONFIGURATIONS. Table 2-2 provides the system configurations, hardware, and software components tested with the SUT. The SUT was tested in an operationally realistic environment to determine interoperability with a complement of DSN switches noted in Table 2-2. Table 2-2 lists the DSN switches which depict the tested configuration and is not intended to identify the only switches that are certified with the SUT. The SUT is certified with switching systems listed on the Unified Capabilities (UC) Approved Products List (APL) that offer the same certified interfaces.

Table 2-2. Tested System Configurations

System Name		Software Release	
Siemens EWSD		19d with Patch Set 46	
Nortel CS2100		Succession Enterprise (SE)09.1	
Avaya S8710		Communication Manager (CM) 4.0 (R014x.00.2.731.7: Super Patch 14419)	
Cisco MXP Family (6000 MXP, 3000 MXP, 1000 MXP, Edge 95 MXP, and the 1700 MXP)		F7.3.1	
Polycom HDX Family (HDX 8000 and HDX 4000)		2.0.5_J	
SUT	Cisco Codian MSE 8000	8050 Supervisory Blade	2.0(1 rev 13)
		8510 Media2 Blade	4.0(1 rev 18)
		8321 ISDN Gateway Blade	2.0(1 rev 19p)

LEGEND:
CS   Communication Server   MSE   Media Services Engine
EWSD   Elektronisches Wählsystem Digital   MXP   Media Experience
IMUX   Inverse Multiplexer   SUT   System Under Test
ISDN   Integrated Services Digital Network

10. TEST LIMITATIONS. None.

11. TEST RESULTS

    a. Discussion. The SUT minimum critical interoperability interface and functional requirements were met through both interoperability certification testing conducted at the JITC GNTF and review of the vendor's LoC. Bonding mode 1 was tested to requirements defined in UCR, 5.2.12.4.5 and Federal Telecommunications Recommendation (FTR) 1080B-2002. Bonding, often referred to as channel aggregation, takes place through inverse multiplexing. Inverse multiplexing takes a high-bandwidth signal and splits it for transport through the network over multiple lower-bandwidth channels. At the receiving end, the multiple, lower-bandwidth signals are recombined into the original high-bandwidth signal. A passed test result was based on 100 percent of the calls receiving a score of four or better on the subjective quality scale as defined in Table 2-3. Furthermore the SUT has the capability of connecting multiple sites at different bandwidth rates. None of the conferees that are connected to the SUT were reduced in video quality due to one conferee being at a lower restricted bandwidth.

Table 2-3. Video and Voice Subjective Quality Scale

Rating	Reference	Definition
1	*Unusable*	Quality is unusable. Voice and video may be heard and seen but is unrecognizable.
2	*Poor*	Quality is unusable. Words and phrases are not fully understandable or video cannot be properly identified.
3	*Fair*	Quality is seriously affected by distortion. Repeating words and phrases are required to convey speech or video is seriously impacted and barely recognizable.
4	***Good***	**Quality is usable. Audio or video is not impaired but some distortion is noticeable**
5	*Excellent*	Quality is unaffected. No discernable problems with either audio or video.

NOTE: Audio and video quality during a conference will receive a subjective rating on the Data Collection Form. A rating of lower than 4 on this reference scale is considered a failure.

b. Test Conduct. Multiple two-way 112 - 384-kbps bonding mode 1 Multipoint and Point-to-Point test calls at different durations (15-minute, 30-minute, 1-hour, 24-hours, and 48-hours) and different precedence levels were placed over the test network shown in Figure 2-2 via all the combinations depicted in Table 2-1.

(1) Seven- and ten-digit calls were placed to verify that the SUT met the capability to support both the North American Numbering Plan and the DSN World Wide Numbering and Dialing Plan (WWNDP) defined in UCR, 5.2.12.4.5 (5.2.12.7.4). Multilevel precedence video calls were placed from the SUT and established within the DSN at the respective precedence level dialing the DSN WWNDP access code (e.g. 93: Priority, 92: Immediate, 91: Flash, etc.). The SUT has the ability to prefix any DSN 7 or 10 digit number with a 9X access code which meets this requirement.

(2) The UCR, 5.2.12.4.5 requirements state that the VTC system/endpoints shall meet the requirements of FTR 1080B-2002. The SUT met this requirement through testing and the vendor's LoC.

(3) The UCR, 5.2.12.4.5 requirements state that a loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference. This was tested during each multipoint session established with the SUT by disconnecting single and multiple conferees. This was done by hanging up and simulating a failure by disconnecting the physical interface. The remaining conferees on the multipoint conference were not affected and remained in the conference 100 percent of the time, which met this requirement.

(4) The UCR, 5.2.12.4.5 requirements state that an audio add-on interface, implemented independently of an Integrated Access Switch (IAS), shall be in accordance with the UCR, 5.2.12.3. The SUT met this requirement through testing and the vendor's LoC.

(5) The UCR, 5.2.12.4.5 requirements state that a VTC features and functions used in conjunction with Internet Protocol (IP) network services shall meet the requirements of ITU-T H.323 in accordance with FTR 1080B-2002. Additionally, ITU-T

H.323 video end instruments must meet the tagging requirements as specified in UCR 2008, section 5.2.12.8.2.9. This requirement was met by the SUT with testing and the vendors LoC. The SUT has the ability to apply a Service Class Tag for signaling and video media at any value from 0 to 63, which met the requirement.

(6) A VTC system/endpoint that uses an integrated PRI interface to connect to the DSN shall be in conformance with the requirements associated with an IAS as described in the UCR, 5.2.12.7. The SUT met this requirement through testing and the vendor's LoC.

(7) The physical, electrical, and software characteristics of VTU system(s)/ endpoint(s) that are used in the DSN network shall not degrade or impair the serving DSN switch and its associated network operations. This was tested by conducting other tests on the serving DSN switch to include bulk call loading while point-to-point and multipoint video sessions were established. The SUT physical, electrical, and software characteristics did not impair the serving DSN switch and its associated operations, which met the requirement.

(8) Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).

c. Test Summary. The SUT met the critical interface and functional requirements for a VTC system with the interfaces depicted in Table 2-1 and is certified for joint use within the DSN. The SUT meets the critical interoperability requirements for T1 and E1 ISDN PRI interfaces. The SUT met the requirements for an IP interface with the ITU-T H.323 protocol; however, Assured Service is not yet defined for an IP interface with the ITU-T H.323 protocol. Since the IP interface with the ITU-T H.323 protocol does not provide Assured Services during a crisis or contingency, users' access to the DSN will be on a best effort basis. Therefore, Command and Control (C2) VTC users and Special C2 VTC users are not authorized to be served by an IP interface with the ITU-T H.323 protocol.

12. TEST AND ANALYSIS REPORT. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) System, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at https://stp.fhu.disa.mil. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at ttp://jit.fhu.disa.mil (NIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at http://jitc.fhu.disa.mil/tssi.